3462

A BRIEF TREATISE OF THE USE OF THE GLOBE

~~Celeſtiall and Terreſtriall.~~

WHEREIN
Is ſet downe the Principles of the
MATHEMATICKS, fit for all Travellers,
Navigators, and all others that doe
love the Knowledge of the
ſame Art.

By R. T.

LONDON,
Printed by T. FORCET, for WIL: LUGGER, and
are to be ſold at his Shop on *Tower*-hill at the Poſterne-
gate. 1647.

RPJCB

THE PREFACE TO THE READER.

I *Doe here preſent thee (gentle Reader) with a briefe collection of the Uſe of the* GLOBE, *which may ſerve for an Introduction to young Students in the* Mathematicks, *requiring thee to accept thereof: For I doubt not but it will be very good for the furtherance of Travellers in the Art of* Navigation : *and to all others that are deſirous of the knowledge of the beautifull frame of the celeſtiall Orbs, with their Quantities, Diſtances, Courſes, and marvellous motions of the Globes of the Sunne, Moone, Planets and fixed Starres. If therefore this my labour ſhall be gratefully accepted, as I doubt not but it ſhall, if thou* *pleaſe juſtly to cenſure thereof: I ſhall bee incouraged hereafter to ſet forth a Worke of more worth: So I referre my ſelfe to your favourable judgements and curteſies, committing thee to the Sacred tuition of him that ruleth all.*

Farewell.

Thine in all Affection,

R. T.

INTRO.

INTRODUCTION TO ASTRONOMY.

Definitions of the Globe.

THe Globe is a perfect round body, contained under one plaine: In the middle thereof there is a point called Center, from whence all lines drawne to the out-ſide are of like length, and called Semidiameters.

The Axes of the Globe is a Diameter, about which it moveth; and the ends thereof are called the Poles of the Globe.

In this reſpect the frame of the Heavens is called the Globe of the heavens, and the earth his Center.

The Axes is a line imagined, paſſing by the Center of the Earth to the Heavens, and the ends thereof is called the Poles, which are two points imagined in the heavens, whereof the one is called the North pole, and the other the South pole.

Of the Circles of the Globe.

Circles of the Globe are certaine imaginary Lines, and are termed either leſſer, or greater Circles

Greater Circles, are ſuch as divide the Globe into two equall parts.

Leſſer, are ſuch as divide the Globe into unequall parts.

Greater Circles of the Globe in common accounts are ſixe in number, *viz.*

The
Horizon.
Meridian.
Equinoctiall.
Zodiack.
and
Two Collures.

Leſſer Circles in common account, are foure in number, *viz.*

The
Two Tropicks.
Two poler Circles.

The Horizon, divideth that part of the heavens wee doe ſee, from that part we ſee not, and is that Circle; where ſtanding in a plaine field, and looking about, you would imagine the Earth and Heavens doe meet together, and cannot be perfectly diſcerned but at Sea.

The Axes of the Horizon, is an imagined line, paſſing by the Center of the earth to the heavens, and the ends thereof are called the poles, *Zenith* and *Nadir.*

The *Zenith* is the Point direct over our heads, and the *Nadir* direct under our feet.

As a man moveth himſelfe any way, ſo is altered the Horizon.

The Meridian cutteth the Horizon at right Sphericall angles, and paſſeth by the Poles of heaven, and by the *Zenith* and *Nadir*, and is that Circle wherein the *Sun* is at noone, and at midnight: It divideth the Globe into two equall parts by Eaſt and Weſt, whoſe axes is a line paſſing by the Center of the earth to the heavens, and the ends thereof the Poles, which are the two points of the interſection of the Eaſt and Weſt.

Any man moving directly North and South, keepeth the ſame Meridian: but going Eaſt or Weſt, hee altereth the ſame.

The Equinoctiall cutteth the Meridian at right ſphericall Angles, and lyeth equidiſtant betwixt each Poles, and divideth the Globe into two equall parts, by North and South parts; to which Circle when the *Sun* commeth under it, it maketh the Day and Night of like length to all people in the world, except under the Poles; and the Sun commeth under this Circle two dayes in the yeare, *viz.* The 11th. of *March*, and on the 14th. of *September.*

The Axes and Poles whereof, are the axes and poles of Heaven.

The Zodiack is a great Circle, having in bredth 12. Degrees, which bredth is limited for the wandring of Planets, upon which Circle are the 12. Sines placed, which are twelve Conſtellations.

A Conſtellation is any certain number of Starres, gathered together into one forme by the ancient Aſtronomers, who have given them names, whereby they are knowne to all Chriſtendome; which Sines have certaine Characters given unto them, and are theſe following:

1	*March.*	Northerne Sines	1	*Aries.*	♈
2	*Aprill.*		2	*Taurus.*	♉
3	*May.*		3	*Gemini.*	♊
4	*June.*		4	*Cancer.*	♋
5	*July.*		5	*Leo.*	♌
6	*Auguſt.*		6	*Virgo.*	♍
7	*September.*	Southerne Sines	7	*Libra.*	♎
8	*October.*		8	*Scorpio.*	♏
9	*November.*		9	*Sagitarius.*	♐
10	*December.*		10	*Capricornus.*	♑
11	*January.*		11	*Aquarius.*	♒
12	*February.*		12	*Piſces.*	♓

The firſt ſixe are called Northerne ſines, for that they are placed upon the North ſide of the Equinoctiall; and the laſt ſixe are called Southerne ſines, for that they are placed upon the South-ſide of the Equinoctiall.

In the middle of the Zodiack is a line called the Ecliptick, from which line the center of the Sun never ſwarveth, and this line cutteth the Equinoctiall at oblique angles, and ſwarveth from it 23 Degrees 30 minutes: Which line when the Sun and Moone are in a diameter, that is; oppoſite, then is the Moone eclipſed; that is, darkned by the ſhadow of the Earth, the earth being betwixt the Sun and the Moone.

And when the Sun and Moone are both under the line in a ſemidiameter, then is the Sun eclipſed; the Moone being interpoſed betwixt our ſight and the Sun : This line Ecliptick is deſcribed upon the Globe for the whole Zodiack, whoſe axes is a line paſſing by the Center of the earth to the heavens, and the ends thereof are his Poles, which are two points ſo farre diſtant from the poles of the world, as the *Sun* his greateſt diſtance from the Equinoctiall, *viz.* 23 degrees 30 minutes.

The two Collures are two Meridians cutting the Equinoctiall and the Ecliptick into foure equall parts, the one paſſing by the firſt point of *Aries* and *Libra*, and is called the Equinoctiall collure. The other paſſing by the firſt point of *Cancer* and *Capricorne*, and is called the Solſtitiall collure: Theſe two Circles doe divide the yeare in foure equall parts, *viz.* Spring-time, Sommer, Harveſt, and Winter.

1	♈	Spring-time.	7	♎	Harveſt.
2	♉		8	♏	
3	♊		9	♐	
4	♋	Sommer.	10	♑	Winter.
5	♌		11	♒	
6	♍		12	♓	

The meaning whereof is thus: From that time the *Sun* entreth into *Aries*, till it enter into *Cancer*, is called Spring time, and ſo of the reſt, ſo that it is the paſſage of the *Sunne* in the ſignes, that cauſeth the alteration or the reaſon, and the *Sunne* paſſeth throughout the whole ſignes in one yeere, *viz.* in 365 dayes and 6 houres neare.

Of the leſſer Circles,

THe Tropicke of *Cancer* is a Circle parallel to the Equinoctiall 23 degrees 30 minutes, diſtant from it Northward, and is that Circle under which the Center of the *Sunne* maketh her diagonall arch, when ſhe is in the firſt point of *Cancer*, which is to us that have Northern Latitude, the longeſt day in the yeere being the 1 or 13 of *Iune*.

The Tropicke of *Capricorne* is a Circle parallel to the Equinoctiall, ſo farre to the Southward, as the Tropicke of *Cancer* is Northward, *viz.* 23 degrees 30 minutes, and is the Circle under which the Center of the *Sunne* maketh her diagonall arch, when ſhe is in the firſt point of *Capricorne*, which to us that have Northern Latitude, is the ſhorteſt day in winter, *viz.* the 12 or 13 of *December.* Theſe two Circles are termed the limit of the *Sunnes* progreſſe: for betweene theſe two Circles the *Sunne* hath his continuall courſe, and never exceedeth beyond any of them.

The Circle articke is a Circle parallel to the Equinoctiall, ſo farre diſtant from the North pole, as the Tropicke of *Cancer* is from the Equinoctiall, *viz.* 23 deg. 30 minutes.

The Circle antarticke is a Circle parallel to the Equinoctiall ſo farre diſtant from the South pole, as the Tropicke of *Capricorne* is from the Equinoctiall, *viz.* 23 degrees 30 minutes.

Now you muſt underſtand, there is but one Equinoctiall, one Zodiecke, one Eclipticke, two Collures.

But there are divers Meridians, all which meet in the two Poles of the world, and cut the Equinoctiall at right angles, and are ſo many in number as there can be points imagined in the Equinoctiall.

There are divers Horizons: for the Horizon altereth to any man, according as he moveth himſelfe from his place of being.

There are divers Parallels, ſo called for that they are parallel to the Equinoctiall, and ſo many in number, as there can be points imagined in the Meridian.

Beſides theſe Circles before mentioned, there are foure other kind of Circles of great uſe, *viz.* Azimuth and Almicanthars, Circles of Longitude and Latitude.

Azimuths are great Circles, and meet all in the Zenith and Nadir, and cut the Horizon at right angles, and are numbred in the Horizon.

Almicanthars are leſſer Circles parallel to the Horizon, as the parallels are to the Equinoctiall, and are numbred from the Horizon towards the Zenith.

Circles of Longitude, are great Circles meeting all in the poles of the Eclipticke, and cut the Eclipticke at right angles, and are numbred in the Eclipticke.

Circles of Latitude, are leſſer Circles parallel to the Eclipticke, as the parallels are to the Equinoctiall, and are numbred from the Eclipticke, to the poles of the Eclipticke.

Every Circle of the Globe is imagined to be divided into 360 degrees, and every degree into 60 minutes, every minute into 60 ſeconds, and ſo tell the tenth for the preciſeneſſe, for that a degree in the heavens is a large ſpace.

In every great Circle the degrees are equall one to another.

In every leſſer Circle they are equall in the ſame Circle, but unequall to thoſe of another Circle, according as they grow nearer the Poles.

There belongeth to the furniſhing of a Globe two other things, that is, an Houre circle, with an Index and a quadrant of Altitude.

The houre Circle is of Braſſe, divided into 24 houres by 12, and is to be placed upon the Meridian, upon the Pole elevated parallel to the Equinoctiall.

The Index is a little ruler to be put upon the Pole.

The Quadrant of Altitude is a bowed ruler of Braſſe, divided into 60 degrees, equall to the degrees of the Globe, and hath a joynt to faſten the ſame upon the Meridian, and is alwayes to be placed upon the Zenith.

For the practice of Aſtronomie and Coſmographie, there are two Globes made, the one in the heavens, which is called the Celeſtiall Globe; and the other of the Earth, which is called the Terreſtiall Globe.

Vpon the Celeſtiall Globe are pictured all the Starres upon the Convexitie thereof, as we behold them in the Heavens, in the Concavity thereof in forme and diſtance.

Vpon the Globe of the Earth is ſet Sea and Land, making one perfect body; all the known parts being laid down in forme proportion, and diſtance by ſcale according to the proportion of the Earth.

Of the ſuperficies of the Celeſtiall Globe.

TO the intent that the knowledge of Starres might be brought into rule and memory of men, therefore the ancient Aſtronomers gathered them together into certain conſtellations, and gave them names, whereby they are known unto all the world, that have the knowledge of Letters.

A Conſtellation is a certaine number of Starres gathered together in one forme, and ſo retaine their names, whereby they are particularly knowne, and are in number according to the ancient account, 48: and are divided into three parts, *viz.*

Northern	Conſtellations	21
Zodiake		12
Southerne		15

The Northern Conſtellations are 21. *viz.*

1	*Vrſa minor,*	7	12	*Heniochus or Auriga,*	14
2	*Vrſa major,*	27	13	*Serpentarius,*	24
3	*Draco,*	31	14	*Serpens,*	18
4	*Cepheus,*	11	15	*Sagittarius,*	5
5	*Bootes or Arctophylax,*	22	16	*Aquila,*	9
6	*Corona Borealis;*	8	17	*Delphinus,*	10
7	*Engonaſus aut Hercules,*	29	18	*Equulus light Horſe,*	4
8	*Lyra,*	10	19	*Pegaſus,*	20
9	*Olor aut Avis,*	17	20	*Andromeda,*	23
10	*Caſſiopea,*	13	21	*Triangulus.*	4
11	*Perſeus,*	26			332

Zodiack Conſtellations, are 12, *viz.*

1	*Aries,*	13	7	*Libra,*	8
2	*Taurus,*	23	8	*Scorpius,*	21
3	*Gemini,*	18	9	*Sagitarius,*	31
4	*Cancer,*	9	10	*Capricornus,*	28
5	*Leo,*	27	11	*Aquarius,*	42
6	*Virgo,*	26	12	*Piſces.*	34
					280

Southerne Conſtellations are 15, *viz.*

1	*Cetus,*	22	9	*Crater,*	7
2	*Orion,*	31	10	*Corvus,*	7
3	*Flumen Eridanus,*	34	11	*Centaurus,*	37
4	*Lupus,*	12	12	*Fera aut Lupus,*	19
5	*Canis major,*	18	13	*Ara vel altar,*	7
6	*Canis minor vel Canicula,*	2	14	*Corona auſtr. vel merid.*	13
7	*Argonavis,*	41	15	*Piſcis notius.*	11
8	*Hydra,*	25			293

Beſides theſe there are 120 Starres that are exempt out of all the Conſtellations, ſo that the number of ſtarres ſet upon the Globe are 1025, and divers of them have proper names, which J here omit.

You muſt underſtand that all the Stars in heaven are not numbred, nor cannot, for that divers of them are ſo ſmall; but theſe 1025 are the principalleſt amongſt them, and all that have ever yet been accounted of.

You muſt underſtand, that of theſe Stars ſome are greater then other, and are diſtinguiſhed in ſix ſorts of bigneſſes, and their meaſures is the Earth, and their proportions are thus delivered, *viz.*

A Star of the firſt bigneſſe, is 107 times bigger then the earth.

A ſtarre of the ſecond bigneſſe, is 90 times the globe of the earth.

A ſtarre of the third bigneſſe, is 72 times the globe of the earth.

A ſtarre of the fourth bigneſſe, is 54 times the globe of the earth.

A ſtarre of the fifth bigneſſe, is 36 times the globe of the earth.

A ſtarre of the ſixth bigneſſe, is 18 times the globe of the earth.

Stars magnitude,	and the quantity of each magnitude.
1	15
2	45
3	208
4	474
5	427
6	49
Cloudie,	5
Obſcure,	9
Parnaſſus faire,	3

In all = 2025.

Upon each Globe there is a Table ſet downe in what forme every Star of any bigneſſe is made, whereby you may readily know any ſtarre in any Conſtellation of what bigneſſe it is.

And thus much in briefe for the ſuperficies of the Globe of the Heavens.

Terreſtriall Globe.

VPon the Globe of the Earth is ſet the picture of the earth, Land, and Sea; making one perfect round body; and as the Circles (before mentioned) are imagined in the Heavens, ſo part of them are imagined and drawne upon the Globe of the earth; as the Equinoctiall, the Meridians and Parallels.

The Globe of the Earth is firſt generall, divided into five parts, called five Zones: That is, one burnt, two temperate, and two frozen or cold Zones.

The diſtance betwixt the two Tropicks, is called the burnt Zone.

The diſtance from the tropick of *Cancer* to the circle Artick, is called the temperate Zone Northward.

The diſtance from the tropick of *Capricorne* to the circle Antartick, is called the temperate Zone Southward.

The ſpace of the Earth contained within the two poler Circles, is termed the two frozen Zones.

The Earth is reckoned by Longitude and Latitude.

Longitude is numbred in the Equinoctiall by Meridians from the generall Meridian, into the Eaſt, and containeth the whole compaſſe of the Earth, *viz.* 360 Degrees.

The fixed Meridian is that Meridian that paſſeth by the Iland of *Azores*, accnrding to the ancient Coſmographers: yet the ſame may be placed in any other place at pleaſure.

The reaſons why they did there begin to reckon the Longitude, were two.

Firſt, for that at that time there was no Land knowne to the Weſtward in that place.

The ſecond was, for that under the Meridion the Needle had no variation, but did point directly North and South.

The Latitude is reckoned from the Equinoctiall towards either Pole, and is double, that is, Northerne and Southerne Latitude.

Thoſe are ſaid to have Northerne Latitude, that dwell on the North ſide of the Equinoctiall, and contrary thoſe are ſaid to have Southerne Latitude that dwell on the South ſide of the Equinoctiall.

The Earth is divided into foure parts. *viz.*
- *Europa.*
- *Aſia.*
- *Africa.*
- *America.*

Europe is bounded from *Aſia* by the mid-land Sea, and *Mare Mauritania*, by the marches called *Palus Meotis*, and by the River *Tanis* and *Dwiana*.

The Provinces are theſe.

1 *Germanie.*
2 *Italy.*
3 *France.*
4 *Spayne.*
5 *Denmarke.*
6 *Norway.*
7 *Swedeland.*
8 *Muſcovia.*
9 *Polonia.*
10 *Hungaria.*
11 *Clavonia and*
12 *Grecia.*

The principall Ilands.

1 *England.*
2 *Scotland.*
3 *Ireland.*
4 *Sicilia.*
5 *Candia.*
6 *Corſica.*
7 *Sardigna.*
8 *Negropont.*

Aſia is bounded from *Europe* by the River *Tanis* and *Dwiana*, from *Africke* by the narrow necke of Land betwixt the red Sea, and the mid-land Sea.

The Provinces are.

China
Perſia.
Part of Mſcouia, and
Tartaria.

In this part of the world was Paradiſe and the Land of promiſe.

Africa is bounded with the mid-land Sea and the red Sea.

Provinces.

1 *Egypt.*
2 *Barbaria.*
3 *Æthiopia.*
4 *Nubia.*
5 *Abaſmies.*
6 *Alonomotopa.*

Ilands.

1 *Madagaſcar, or S. Lorrenyo.*
2 *S. Thome.*
3 *Inſule de Catoverd.*
4 *Inſule de Canaria.*
5 *Inſule de Madera.*

America is wholly bounded by the Sea and the ſtraight of *Magellanus*, and conſiſteth in two parts, *viz.*

Parvana. *Mexicana.*

Parvana conſiſteth in theſe Provinces.

1 *Braſilia.*
2 *Tiſnada.*
3 *Caribana.*
4 *Cartagena.*
5 *Peru.*
6 *Charcas.*
7 *Chile.*
8 *Chicha*, *and*
9 *Patagones.*

Mexicana conſiſteth in theſe Provinces

1 *Nova Hiſpania.*
2 *Terra Florida.*
3 *Nova Albion.*
4 *Califorma.*
5 *Norembega.*
6 *Nova Francia.*
7 *Eſtotiland.*

Parvana chiefe Ilands.

1 *Hiſpaniola.*
2 *Cuba, with all the other Ilands of the West India.*
3 *Margarite Inſule.*
4 *Molucque Inſule.*
5 *Remeres Inſule.*
6 *Java major.*
7 *Java minor.*
8 *Salomonis Inſule.*
9 *All the other Ilands of East India.*

Mexicana chiefe Ilands.

1 *Greeneland.* 2 *Iſland.* 3 *Freeſeland.*

The names of the Seas,

1 *Ocean Sea.*
2 *Narrow Sea.*
3 *Mediterraneum Sea.*
4 *Mare Major.*
5 *Caſpium mare.*
6 *East Indian Sea.*
7 *Red Sea.*
8 *Perſian Sea.*
9 *South Sea.*

And thus much in briefe for the ſuperficies of the Terreſtiall Globe.

You muſt underſtand that the Ecliptick is deſcribed upon the Terreſtiall Globe as well as upon the Celeſtiall; becauſe that all the concluſions of the *Sunne* are as well wrought upon the Terreſtiall Globe, as by the Celeſtiall, and the ſame furniture is to be fitted upon the Terreſtiall Globe, that belongeth to the Celeſtiall: and thus much in briefe for their formes.

Now followeth their uſe: firſt of the Celeſtiall, and next of the Terreſtiall.

FIRST PROPOSITION OF THE CELESTIALL GLOBE.

The day of the Moneth being given, to find the place of the Sunne.

VPon the Horizon of the Globe is graduated the Theoricke of the *Sunne*, that is, there is placed the moneths, and their dayes, the ſignes and their degrees. Therefore find the day of the moneth, and right againſt the ſame you ſhall finde the ſigne and degree that the *Sunne* poſſeſſeth.

Propoſition 2.

The place of the Sunne being given, to finde the day of the Moneth.

FInd the place of the *Sunne* in the Horizon, and againſt the ſame you ſhall find the day of the moneth.

Prop. 3 *The place of the Sunne being given, to finde the Declination.*

BRing the place of the *Sunne* to the Meridian of the Globe, and the portion of the Meridian included betwixt the place of the *Sunne* and the Equinoctiall, ſheweth the Declination.

Prop. 4. *The place of the Sunne and the Meridian height of the Sunne being given, to find the height of the Pole.*

BRing the place of the *Sunne* to the Meridian of the Globe, and from that point account downewards to the Horizon the height of the *Sunne*, and let the ends thereof end in the Horizon: then in the oppoſite part, you ſhall find cut on the Meridian the height of the Pole, that is, the portion of the Meridian included betwixt the Pole and Horizon, ſheweth the height of the Pole.

Prop. 5. *To rectifie the Globe fit for uſe, the elevation of the Pole being known.*

SEt the Poles anſwerable to the Poles of Heaven.

Prop. 6. *To rectifie the quadrant of Altitude.*

SEt the joynt thereof upon the Meridian ſo far diſtant from the Equinoctiall as the Pole is elevated above the Horizon, that is, place the joint in the Zenith.

Prop. 7. *To rectifie the Index of the houre Circle, for any day appointed.*

BRing the place of the *Sunne* to the Meridian of the Globe, and then put the Index upon 12 of the clock, or upon that 12, which is uppermoſt from the Horizon.

Prop. 8. *The elevation of the Pole and place of the Sunne being given, to find the Meridian, height of the Sunne.*

THe Globe rectified, bring the place of the Sunne to the Meridian, and the degrees from the place of the Sunne to the Horizon, ſhew the demand.

Prop. 9. *The elevation of the Pole and place of the Sunne being given, to find the houre of the Sun riſing.*

THe Globe and Index of the houre Circle being rectified, bring the place of the Sunne to the Eaſt ſide of the Horizon, and the Index of the houre Circle ſheweth the houre of the Sunne riſing.

Prop. 10. *The elevation of the Pole and place of the Sun being given, to finde the houre of the Sun ſetting.*

THe Globe and Index of the houre Circle being rectified, bring the place of the Sun to the Weſt ſide of the Globe, and the Index of the houre Circle ſheweth the houre of the Sunnes ſetting.

Prop. 11. *The elevation of the Pole and place of the Sun being given, to find the length of the day.*

FInd the houre of the Sun ſetting by the laſt Propoſition, and double that time, ſo have you the length of the Day.

Prop. 12. *The elevation of the Pole and place of the Sun being given, to find the Amplitude.*

THe Globe rectified, bring the place of the Sun to the Horizon, and the portion of the Horizon included betwixt the place of the Sunne, and the point of Eaſt or Weſt, ſheweth the Amplitude.

Prop. 13. *The place of the Sunne and Amplitude being given, to finde the height of the Pole.*

TVrne the Globe and move the Meridian untill you have fitted the place of the Sunne in the point of the Amplitude, and then the Pole of the Globe ſheweth the height of the Pole, that is, the place included betwixt the Pole of the Globe and the Horizon, ſheweth in the Meridian the height thereof.

Prop. 14. *The place of the Sun being given, to finde the right aſcention thereof.*

BRing the place of the Sunne to the Meridian, and the degree cut by the Meridian in the Equinoctiall ſheweth the right Aſcenſion.

Prop. 15. *The elevation of the Pole and place of the Sun being given, to find the crooked Aſcention.*

THe Globe rectified, bring the place of the Sun to the Eaſt ſide of the Globe, and the degree cut by the Horizon in the Equinoctiall, ſheweth the crooked Aſcention.

Prop. 16. *To find the difference of Aſcention.*

FIrſt find the right, and then the crooked Aſcention: then take the leſſer from the greater, and that reſt ſheweth the difference of Aſcention, except that remainer do exceed 180 degrees, and then that reſt taken from 360 degrees, ſheweth the difference of Aſcention.

Prop. 17. *By the difference of Aſcention, to find the length of the day.*

DOuble the difference of Aſcention, and reduce that into time, by allowing 15 degrees to an houre, and foure minutes to a degree, and that ſheweth the length of the day, longer or ſhorter then an Equinoctiall day: if the Sunne have declination towards the Pole Elevated, then is it longer then the Equinoctiall day, but otherwiſe is ſhorter.

The Equinoctiall day is 12 houres,

Prop. 18. *The Elevation of the Pole, and declination of the Sunne being known, and the height of the Sunne being taken, to find the houre of the day and Azimuth of the Sunne.*

THe Globe Index of the houre Circle, and Quadrant of Altitude being rectified, turne the Globe, and move the Quadrant of Altitude, untill you have fitted the place of the Sunne in the Almicanthar; then doth the Index of the houre Circle ſhew the houre, and the quadrant of Altitude ſheweth in the Horizon the Azimuth.

In this propoſition you muſt conſider whether it be in the forenoone or afternoone: if in the forenoone, put the Quadrant on the Eaſt ſide: and if in the afternoone, on the West ſide of the Globe.

Prop. 19. *The height of the Sunne being given, to find the houre of the day.*

THe Globe Index and the Quadrant of Altitude being rectified, bring the place of the Sunne, untill it cut the height given in the Quadrant of Altitude, and the Index in the houre Circle ſheweth the houre.

Prop. 20. *The houre of the day being given, to finde the height of the Sunne.*

ALL things rectified, as in the laſt Propoſition turne the Globe untill the Index cut the houre: then bring the quadrant of Altitude over the place of the Sun, and the degree cut on the quadrant of Altitude, ſheweth the height of the Sun.

Prop. 21. *The Azimuth of the Sun being given, to find the Houre of the day, and height of the Sun.*

ALl things rectified, put the quadrant of Altitude to the Azimuth: then turne the Globe, untill the place of the Sun touch the edge of the Quadrant, then the Index of the houre Circle ſheweth the houre, and the degree cut on the quadrant of altitude, ſheweth the height of the Sun at that time.

Prop. 22. *The houre of the Day being given, to find the Azimuth of the Sun.*

ALl things rectified, turne the Index to the Houre: then bring the quadrant of altitude on the place of the Sun, and the end thereof in the Horizon ſheweth the Azimuth.

Of the Starres.

Propoſition, 1.
To find the Declination of any Starre.

WOrke by the Starre, as you did by the Sunne in the 3. Propoſition, *viz.* An example: *Arcturus* in *Bootes leggs* brought to the Meridian of the Globe, the portion of the Meridian betwixt the place and the Equinoctiall, ſheweth his declination to the Northerne.

Prop. 2. *The Meridian height of any Starre being given, to find the height of the Pole.*

WOrke by the ſtarre, as you did by the Sunne in the fourth Propoſition, *viz. Arcturus Meridionall* height ſuppoſed to be given 60 deg. then the height of the Pole oppoſite is found to be 52 degrees.

Prop. 3. *To finde the houre of riſing of any ſtarre.*

ALL things rectified, worke by the ſtarre, as by the Sunne in the 9 Propoſition: for to know at any time the riſing of *Arcturus*, or any other ſtarre; you muſt know in what ſigne the Sunne is. As for example: The Sunne riſing in the 19 degree of *Capricorne*, which being brought under the fixed Meridian, and then the Globe and Index rectified, *Arcturus* is then found to riſe at 6 houres and 30 minutes in the morning, and ſetteth in the evening at houre 10. 30 minutes.

Prop. 4. *To find the houre of any ſtarre-ſetting.*

ALL things rectified, worke by the ſtarre as by the Sun in the 10 Propoſition, or precedent demonſtration.

Prop. 5. *To finde the time of any ſtarre above the earth.*

FIrſt find the houre of riſing, and then the houre of ſetting: the difference of which time is the thing required.

Example.

Arcturus is found by the former Propoſition to riſe at houre 6. 30, which is 5. 30, before 12. and he ſetteth at 10. 30: both which times added together, maketh 16 houres, and ſo is *Arcturus* found to be 16 houres above the earth.

Prop. 6. *To find the Amplitude of any Starre.*

WOrke as by the Sunne in the 12 Propoſition. Example: *Arcturus* Amplitude is found then, when he is brought to the Horizon; in the ſide is 37 degrees of Amplitude.

Prop. 7, *The Amplitude of any ſtarre being given, to find the height of the Pole.*

WOrke by the ſtarre, as by the Sun in the 13 Propoſition, Example: *Arcturus* Amplitude being given, 37 degrees; the Pole of Heaven is found to be 52 degrees above the Horiozn elevated.

Prop. 8. *To find the right Aſcention of any ſtarre.*

VVOrke by the ſtarre, as by the Sun in the 14 Propoſition. Example: Bring *Arcturus* to the Meridian, and the point in the Equinoctiall being then under the Meridian, ſheweth the right Aſcention to be 209 deg.

Prop. 9. *To find the crooked Aſcention of any ſtarre.*

VVOrke by the ſtarre, as you did by the Sunne in the 15 Propoſition. Example: The place of *Arcturus* being brought to the Horizon, the degrees of the Equinoctiall againſt the Horizon, do prove his crooked Aſcention to be 178 degrees.

Prop. 10. *To find the Latitude of any ſtarre.*

PUt the Center of the Quadrant of Altitude, being taken from the Meridian, upon the Pole of the Ecliptick *viz. Arcturus* Latitude is to be meaſured from the Pole Ecliptícke, with the Quadrant of Altitude, and is found to be 31 degrees 30 minutes, and his Longitude is 19 degrees of *Libra*, to be reckoned with the Quadrant of Altitude, being brought from the Pole Ecliptick; or Zodiacke, paſſing right on the place of *Arcturus*.

Compoſtella in *Galicia* is by ſundry matters found to be in the 43 parallel, which is in Latitude 43 deg. Northward, and in the 11 Meridian 30 minutes, which is in Longitude a 11 degrees and a halfe.

Circles of

- Latitude or Altitude, beginneth from the Equinoctiall by parallels Northward or Southwards, to be reckoned to 90 degrees.
- Longitude to be reckoned by Meridians numbred in the Eqninoctiall, which is that Meridian paſſing between the Equinoctiall and the Jles of the *Canaries*, and are numbred in the Eaſt round about the Globe, *viz.* to 360 degrees.

One houre containeth 15 degrees or 60 minutes, and 4 of thoſe minutes containe one degree: therefore dividing ſtill your number of minutes by 4, and the quotient ſhall be degrees.

Example.

Twelve minutes of an houre give three degrees of Longitude, which is 12 minutes, ſo that every minute of an houres time is ¼ part of one degree in Longitude, as is proved by the worke following.

Heere followeth the 11 Propoſition concerning the Starres.

Two ſtarres ſeene in the Horizon to riſe or to ſet at one time thereby to find the height of the Pole. Example.

THe two Starres riſing together, the one is the firſt ſtarre in *Orions girdle*, and the other ſtar is that which is in *Pegaſus* noſe: therefore turn the Globe untill you fit the ſaid two Starres equall with the Horizon in the Eaſt: then ſhall the portion betwixt the North Pole and that Horizon, teach you the Poles height to be in 53 degrees.

Prop. 12. *The place of the Sunne and the length of the day being given, to find the height of the Pole.*

THe place of the Sunne given is in 17 degrees of *Libra*, and the length of the day given, is 11 houres. Therefore firſt find out the right Aſcention of the Sun: then number from that place ſo many Meridians as doe containe the halfe length of the day given: and let the end of thoſe degrees reſt under the Meridian: then move the Meridian of the Globe, untill you fit the place of the Sunne in the Horizon, and then ſhall you find upon the Meridian the juſt height of the Pole.

For Example.

The Sunne being in 17 degrees of *Libra*, her right Aſcention is found to be 195 degrees, the dayes length given is 11: therefore take the one halfe, that is 5. houres ½: which time reduced in to degrees, *facit* 82 degrees 30 minutes, the which ſubtracted out of the Sunnes Aſcention 195, there reſt 112 degrees 30 minutes, which number finde out upon the Equinoctiall, and bring it to the fixed Meridian, and there keepe the ſame, untill by moving the Meridian you doe bring the 17 degree of *Libra* equall with the Horizon: that done, then will the height of the Pole be found elevated juſt 51 degrees.

Prop. 13. *The length of the day and Amplitude of the Sun being given, to find the height of the Pole, and the Sunnes Declination.*

THe length of the day given, is eleven houres. The Amplitude of the Sunne given, is 10 degrees. Therefore number from the firſt Meridian Weſtward, thoſe degrees that have the length of the given day, reduced in degrees doe yeeld, and let the end of thoſe degrees begin in the Equinoctiall, reſt under the fixed Meridian: then move the Globe untill you have fitted the firſt Meridian to cut in the Amplitude given, and then ſhall the Meridian of the Globe ſhew the juſt height of the Pole. *Example.*

The length of the day given is 11 houres, whoſe halfe is 5 ½, the ſame reduced into degrees *facit* 28 degrees 30 minutes, the which taken out of 360 degrees, reſt 277 degrees 30 minutes, the latter point whereof fix under the fixed Meridian, there holding the ſame untill by moving the fixed Meridian, you can bring the given Amplitude on the Eaſt ſide, to fit upon the firſt point of the Meridian: which done, then ſhal you find the Pole elevated 51 degrees above the Horizon.

PROPOSITIONS THAT ARE REſolved upon the Terreſtiall Globe.

That all Propoſitions concerning the Sun, may as well be reſolved upon the Terreſtiall as the Celeſtiall Globe.

Prop. 1. *To find the Latitude of any place.*

BRing the place, whoſe Latitude is required, to the Meridian of the Globe, and the portion of the Meridian included between that place and the Equinoctiall, ſheweth the Latitude.

And ſo are the following Places in Latitude Northward.

London.	51.^{d}.30.m.	*Raguſi.*	42.
Hamborough.	54.	*Cyprus.*	37.15.
Amſterdam.	52. full.	*Rhodus.*	38.
Antwerpe.	51. ſcarce,	*Ieruſalem.*	34.40.
Belloigne.	48.30.	*Teneriffe.*	28.30.
Paris.	48.30.	*Capo-blanco.*	20.
Lyons.	46.	*Iſla. St. Helena.*	16.40. *Southwards.*
Bordeaux.	43.40.		
S. Ander.	42.30.	*Nombre de dios.*	9. *Northwards.*
The Groyne.	43.		
Lisbone.	39.30.	*Pavama.*	8.
Sevill.	37.30.	*Cape de Vela.*	10.
Cape-Martin.	39.40.	*Havana.*	22.
Genoa.	45.	*San Domingo.*	17.30.
Roma.	42.	*Iſle Icaris.*	66.
Naples.	41	*Faue Inſula.*	64.30.
Palermo.	37.30.	*Iſlandia.*	67. 30.
Venice.	46.	*Gibraltare.*	35.

Prop. 2. *To find the Longitude of any place.*

BRing the place appointed to the Meridian of the Globe, and the degrees cut by the Meridian in the Equinoctiall, ſheweth the Longitude.

And ſo are the places hereunder found in Longitude, *viz.*

London.	20.30 *longitude*	*Lisbone.*	13.
Hamborough.	33.30.	*Sevill.*	17. *degrees.*
Antwerpe.	26.30.	*Genoa.*	35.
Paris.	24.	*Roma.*	37
Bordeaux.	22.	*Venice.*	40.
S. Ander.	18.30.	*Palermo.*	37.30.
The Groyne.	13.	*Ieruſalem.*	69.
San Domingo in the West Indies.	310.	*Teneriffe.*	3, *degrees*, 30.
		Palona.	1, *deg. longitude.*

Prop. 3.

Prop. 3. *To find the difference between any two places upon the Globe.*

TAke the diſtance with a paire of Compaſſes, and apply the ſame to the Equinoctiall, accounting for every degree 60 miles or 20 leagues, or according to that Countrey wherein you are.

And ſo are the diſtances betweene.

London and
- *Ieruſalem* 39. *facit* 795 *leagues.*
- *Antwerpe* 3. 30. *facit* 70.
- *Paris.* 4. 20. *facit* 86. $\frac{2}{3}$.
- *Venice.* 13. 40. *facit* 273. $\frac{1}{3}$.
- *Bordeaux*, 8.00. *facit* 170.
- *Lisbona.* 13. $\frac{2}{3}$ *facit* 273.
- *Sevill.* 14. $\frac{3}{4}$. *facit* 295.
- *Roma.* 16. $\frac{1}{2}$. *facit* 330 *leagues.*
- *Teneriffe* 27. 00. *facit* 540.
- *Teerra nova*, 28. 00 *facit* 560,

Prop. 4. *The Latitude and Longitude of any place being given, to find the ſame upon the Globe.*

BRing the Latitude of that place to the Meridian of the Globe, and under the Meridian in the Latitude, ſhall the place required be found.

By the firſt and ſecond Propoſition is this Propoſition reſolved.

Prop. 5. *To find the Antipodes to any place.*

BRing the place appointed to the Meridian, and note the Latitude: then in the oppoſite degree of Latitude under the Meridian you ſhall find the point of Antipodes.

And after this ſort are thoſe Antipodes to *London*, that dwell 51 degrees $\frac{1}{2}$. Latitude, and in 180 degr. Longitude in the South-maine.

And to *Sevill*, thoſe that dwell in 37 degrees, 30 min. Latitude, and 196 deg. Longitude, are Antipodes.

And to *Lisbone*, thoſe that dwell in 39 deg. 30 min. Latitude, and 191 deg. Longitude, are Antipodes.

And to *Antwerpe*, thoſe that dwell in 51 deg. Latitude, and 195 deg Longitude in the ſaid South-maine.

The people dwelling under the North and South Pole, and under the Eclipticke Poles, are Antipodes the one to the other.

Thoſe of *Cuſco* in *America*, are Antipodes to thoſe of *Narſinga* in *East India*.

Thoſe of *Lyma* and *Calicut*, are Antipodes to each other.

The *Inſulanes* of *Serrana* and *Iona*, are Antipodes to each other.

Thoſe of *Xaliſco*, *Colinia*, *Guatatlan*, *Petratlan*, *Guaxaca*, &c. are Antipodes to the *Inſulanes* of S. *Laurence*.

Thoſe of *Malaca* are Antipodes to that people dwelling in the Province of *Omagua*.

Prop. 6. *To find the difference of time between any two places.*

BRing the Eaſtermoſt place to the Meridian, and rectifie the Index: then bring the ſecond place alſo to the Meridian, and marke where the Index cuts, it ſheweth the houre at that ſecond place, where it is noone at the firſt. Or to doe this more preciſely, find the difference of the Longitude betwixt theſe two places: which remainder reduce into time, by allowing 15 degrees for an houre, and the difference is found.

Prop. 7. *To find the Difference of the longeſt Day betweene any two places.*

FInd the length of the Day at each place, by the Propoſition before taught, and the difference between them is found by their ſeverall lengths.

Firſt it is to be noted, in Northern Latitude the longeſt Day of the yeare is, when the *Sun* is in the firſt point of *Cancer*, and therefore according to that place is the longeſt day of ſeverall places hereunder ſet downe, the which preciſely have been calculated, by the difference of Aſcention, that the *Sun* made at one ſame time in ſeverall places.

London lying in the Latitude of 51 deg. 30 min. and the place of the *Sun* taken in the firſt deg. of *Cancer*, had right Aſcention 90 deg. and crooked Aſcention 58 deg.

Lisbona Latitude 39. 30, makes 10 deg. difference of Aſcention: which doubled, *facit* 40 deg. thoſe reduced into time, *facit* 2 houres 40 min. thoſe added to 12, *facit* 14 houres 40 minutes, for the longeſt Day.

Genoa Latitude 45 deg. the *Sun* right Aſcention is 90 deg. the crooked 68, the difference is 22: which doubled is 44, which make 2 houres 56 min. of time: thoſe added to 12 houres, make 14 houres 56 min. for the longeſt day.

Roma Latitude 42, hath the ſame difference of Aſcention of the *Sun*, and therefore their longeſt day is equall with thoſe of *Genoa* 14 houres 56 min.

Naples Latitude 41 deg. right Aſcention 90, crooked 64. 30, and the difference thereof *facit* 48 deg. 3 houres 54 min. which added, *facit* 14 houres 54 min.

Venice Latitude 46 deg. right Aſcention 90, crooked 64. 30, and the difference thereof is 51 degr. *facit* 3 houres 24 min. which added, *facit* 15 houres 24 min.

Candia Latitude 27 deg. in that place,and on the ſame day make the Sun 18 degrees difference of Aſcention: which doubled, *facit* 36 which is 2 houres 24 min. of time: which added to 12 houres, *facit* 14 houres 24 min. for their longeſt day.

Rhodes in Latitude 38 deg. *facit* difference 19 deg. doubled 38, *facit* 2 houres 32 min. which added, make 14 14 houres 32 min. for their longeſt day.

At *Ieruſalem* Latitude 34 deg. 40 min. when the Sun is in the firſt deg. of *Cancer*, he differeth in Aſcention 17 deg. which doubled, *facit* 34 degr. the which make of time 2 houres 16 min. which added to 12 houres, *facit* 14 houres 16 min. for the longeſt day.

In *Teneriffe* Iland in the Latitude of 28 deg. 30 min. in the ſame time the Sun doth differ in Aſcention 12 deg.½. which doubled maketh 25 deg. which make of time one one houre 40 minutes: thoſe added to 12 houres, *facit* 13 deg. 40 min. for the longeſt day.

Cape-blanco lying in 20 degrees Latitude, in the ſame time the Sun hath right Aſcention 90 degrees,and crooked 42, reſt 8 of difference, which doubled, *facit* 16 degrees, and of time one houre 4 minutes, which adde to 12, *facit* 13 houres 4 minutes for the longeſt day.

Panama Ilands 8 degrees Latitude, right Aſcentio 96 degrees, crooked 87 degrees, ſo is there difference deg. which doubled, makes 6 deg. and 24 min. of time, ſ is their longeſt day in the yeere 12 houres 24 minutes.

Southerne Ilands, ſcituated under the line Equinoctiall there maketh the Sunne no difference of Aſcention; an therefore the day is alwayes of 12 houres long; bu winter or ſummer the Sun declineth North or Southward

Cape de vela in the Weſt Indies in 12 degrees of Latitude, at the ſame time when the Sunne is in the firſt degree of *Cancer*, hath 90 degrees right Aſcention, and crooked 85, difference is 5, which doubled is 10 minutes, which reduced make 40 minutes of time, which added to 12 houres, ſheweth their longeſt day to be 12 houres, 40 minutes.

Havana at the ſame time differeth the Sunne in Aſcention 9 degres 30 minutes, double makes 19, which is time one houre, 16 minutes, which added to 12, maketh 13 houres, 16 minutes for their longeſt day.

San Domingo Iland maketh the Sunne 7 degrees ½ for difference of Aſcention: which doubled, maketh 15: is one houre time, ſo is their longeſt day 13 houres.

Faire Iland in 64 deg. of Latitude, the Sunne hath at the ſame time 90 deg. right Aſcention, crooked 30, reſt 60 for difference thereof, which doubled, *facit* 120 deg. which maketh time 8 houres, thoſe added to 12 houres, ſheweth that the longeſt day there is 20 houres.

At *Icaria* Iland in 66 deg. Latitude the Sunne being in the firſt degree of *Cancer*, hath 90 deg. right Aſcention, crooked 20, which difference is 70: thoſe doubled, maketh 140 deg. which is 9 houres 20 min. of time, ſo is their longeſt day in the yeere 21 houres 20 minutes.

Iſland in 67 deg. Latitude, on the ſame time hath crooked Aſcention 8 deg. which taken from 90, differeth 82 deg. which doubled, are 164 deg. which reduced into time, do give 10^h.56 min. and thoſe added to the Equinoctial day, *facit* 22 houres 56 min. for the longeſt day in the yeer.

Theſe differences of Aſcention is more preciſely found by projecting the figures, and then by ſcale and compaſſe, and yet more preciſely by Arithmeticall calculation, by which the ſaid difference and length of dayes are found.

14 hou. 20 m. *Ieruſalem*, 17.30
13, 48 d.56 m. *Teneriffe*, 13.37
13. 12 d.56 m. *Capo-blanco*, 9.7
12. 32. *Nombre de dios*, 4
12. 28. *Panama*, 3.30
12 h. 42. — *Capo de vela*, 5.15
13. 20 d.48 m. *Havana*, 10. 6
13. 3 d.4 m. *San Domingo*, 7.53
20. 44. 40. *Fano Inſula*, 65.35
22. 9 d. 20. *Icari Inſula*, 76.10
12. —— *San Thoma*, being under the Equinoctiall, the *Sun* maketh no difference, and therefore alwaies 12. houres.

Prop. 8. *To find the Horizontall poſition and difference betwixt any two Places.*

FIrſt, rectifie the Globe for that place, from the which you would know the Horizontall poſition and diſtance to the other place: bring alſo that firſt place to the Meridian of the Globe, then put the quadrant of Altitude on the Zenith, there let the Globe reſt, then bring the quadrant of Altitude over the two places, and the degrees cut by the end of the quadrant in the Horizon, ſheweth the Horizontall poſition, and the degree cut by the ſecond place in the quadrant, account from the Center downwards, ſheweth the diſtance.

For Example.

The bearing of *Jeruſalem* to *London* is 50 degrees, accounted from the North point Weſtward, and the diſtance is 38 degr. 30 min. And from *London* to *Ieruſalem* the bearing is 85 degrees, accounting from the South point Eaſtward, and the diſtance is as before.

Now to find the Rhombe, adde the two Horizontall poſitions together, and the one half thereof ſheweth it.

From *Ieruſalem* to *Aleppo*, the bearing is 69 degr. from the North point Weſtward, the diſtance is 43 degr. ½: and *Aleppo* beareth to *Ieruſalem* 77 degrees from the North point Eaſtward.

Ieruſalem to *Teneriffe*, beareth 77 degrees from the

North point Weſtward; and *Teneriffe* to *Ieruſalem* 64 deg. accounting from the North point Eaſtwards; and the diſtance betwixt the two places is 55 degrees $\frac{1}{3}$.

Ieruſalem to *Rome*, beareth 67 degr. from the North point Weſtward, diſtance 24 $\frac{1}{3}$: *Rome* to *Ieruſalem* 86 degrees from the South point Weſtwards.

Ieruſalem to *Gibraltare*, beareth 76 degrees from the North point Weſtward; and the diſtance is 43 degrees; and *Gibraltare* to *Ieruſalem* beareth 73 degr. from the North point Eaſtward.

OF THE WORLD.

THe World is divided into two parts, *viz.* Elementall, and Etheriall parts.

The firſt is ſubject to daily alterations, and containeth foure Elements: that is, the Earth the Water, the Aire, and the Fire.

An Element is that, whereof any thing is compounded, and of it ſelfe not compounded; Of theſe foure Elements, any part of any kind is named for the whole, as any part of the earth, is called the Earth.

The Etheriall parts doth compaſſe the Elementall parts in the concavity therof, and containeth 10 Spheres: whereof the firſt, is the ſphere of the *Moone*, and is next unto us. The ſecond, is *Mercurius*: The third, *Venus*: the fourth, *Sol*: The fifth, *Mars*: The ſixth, *Jupiter*: The ſeventh, *Saturnus*: The eight ſphere is the Starry firmament: The ninth, is the Chriſtaline heaven: The tenth, *Primum mobile*, which doth containe all the reſt within it; and whatſoever is beyond or above that, is the habitation of God and his Angels.

The reaſon how the Spheres were firſt found out, were their contrary motions in the Heavens, obſerved by the ancient learned Aſtronomers, and we find that by our owne obſervations, as thus, *viz.*

Firſt, all things in the Heavens turne about the earth, upon the Poles of heaven in 24 houres, and theſe motions are from the Eaſt into the Weſt and this wee attribute to the motion of the 10 Sphere, or *Primum mobile*, without ſtaying; being ſo appointed by God from the beginning, and carrieth about with him in violence all the other Spheres.

All the reſt of the Spheres have contrary motions, every one in his kind, though farre ſlower then the other, and their motions is contrary, from the Weſt to the Eaſt, and ſo are carried about oftentimes by the firſt mover, before they make one perfect revolution in themſelves.

The Chriſtaline or ninth Sphere, his motion is almoſt unſenſible, and is called the Trembling motion, and is performed, according to *Ptolomie* his opinion, in 36000 yeares, but by the opinion of others in a farre longer time, as in 49000 yeares.

The eighth Sphere, being the ſtarry firmament, performeth his motion in 7000 yeares.

The reſt of the Spheres are the 7 Planets, each ſphere containeth in it but one Starre, whereof the uppermoſt and ſloweſt is *Saturne*, which performeth his courſe in 24 yeares, 162 dayes, and 12 houres.

Jupiter performeth his in 11 yeares, 133 dayes, and 23 houres.

Mars performeth his in 322 dayes, and 23 houres.

Sol performeth in 365 dayes and 6 houres, which is one whole yeare compleat.

Venus in 395 dayes and 9 houres, performeth her courſe.

Mercurie performeth it as *Sol*, in 365 dayes, and 6 houres.

Luna performeth her courſe once every 27 dayes & 12 houres.

THE

THE CHARACTERS OF THE PLANETS, are theſe following.

♄ *Saturne,* ♂ *Mars,* ♀ *Venus,* ♃ *Jupiter,*
☉ *Sol,* ☿ *Mercury,* ☾ *Luna.*

THere are Points movable in the Ecliptick, which are called the *Dragons-head,* and the *Dragons-tayle*; and their characters are theſe: Dragons-head ☋, Dragons-tayle ☊.

The Dragons-head, is the point in the Ecliptick, which the ☾. toucheth, when ſhee croſſeth the Ecliptick, and paſſeth to the Northwards of it.

The ☊. is the point in the Ecliptick, where the ☾. paſſeth by, when ſhee croſſeth the Ecliptick, and paſſeth by it to the South, and theſe two Points are oppoſite the one to the other.

To know how the Planets raigne every Houre of the day and night : beginning with Saturday.

Houres of the Day.

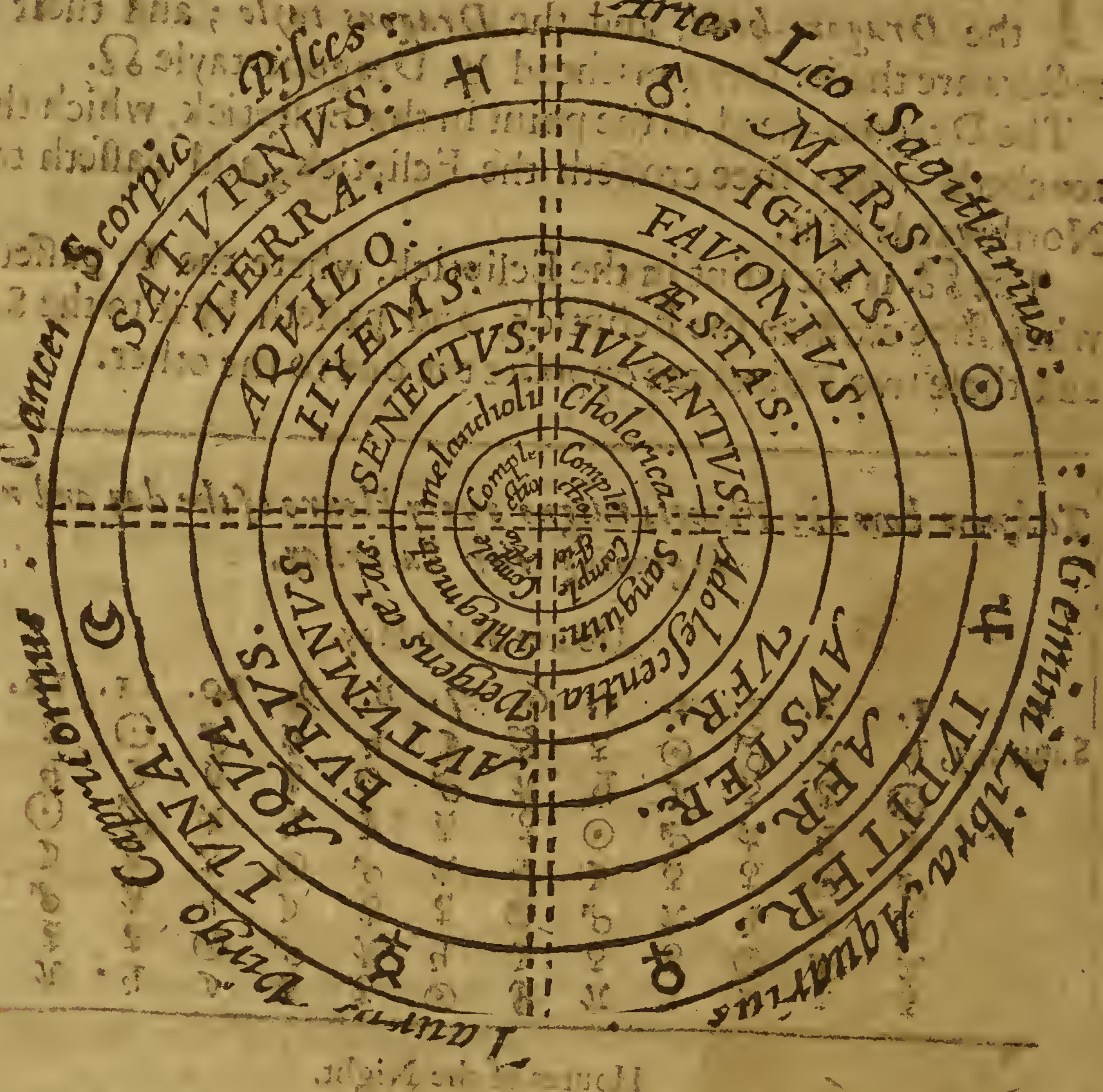
	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
Saturday,	♄	♃	♂	☉	♀	☿	☾	♄	♃	♂	☉	♀
	☉	♀	☿	☾	♄	♃	♂	☉	♀	☿	☾	♄
	☾	♄	♃	♂	☉	♀	☿	☾	♄	♃	♂	☉
	♂	☉	♀	☿	☾	♄	♃	♂	☉	♀	☿	☾
	☿	☾	♄	♃	♂	☉	♀	☿	☾	♄	♃	♂
	♃	♂	☉	♀	☿	☾	♄	♃	♂	☉	♀	☿
	♀	☿	☾	♄	♃	♂	☉	♀	☿	☾	♄	♃

Houres of the Night.

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
Saturday,	☿	☽	♄	♃	♂	☉	♀	☿	☽	♄	♃	♂
	♃	♂	☉	♀	☿	☽	♄	♃	♂	☉	♀	☿
	♀	☿	☽	♄	♃	♂	☉	♀	☿	☽	♄	♃
	♄	♃	♂	☉	♀	☿	☽	♄	♃	♂	☉	♀
	☉	♀	☿	☽	♄	♃	♂	☉	♀	☿	☽	♄
	☽	♄	♃	♂	☉	♀	☿	☽	♄	♃	♂	☉
	♂	☉	♀	☿	☽	♄	♃	♂	☉	♀	☿	☽

FINIS.

18-147


Pisces
Aries
Leo
Sagittarius
☉
Gemini
Libra
Aquarius
Taurus
Virgo
Capricornus
Cancer
Scorpio
SATVRNVS: ♄
♂ MARS:
♃ IVPITER:
♀
☾ LVNA:
☿
TERRA:
IGNIS:
AER:
AQVA:
AQVILO:
FAVONIVS:
AVSTER:
EVRVS:
HYEMS:
ÆSTAS:
VER:
AVTVMNVS:
SENECTVS:
IVVENTVS:
Adolescentia
Decrepita ætas:
melancholi
Cholerica
Sanguin:
Phlegmatic
Comple. Ætat
Comple. Ætat
Comple. Ætat
Comple. Ætat

D647
R111b

pref. T
1st
c2.F8 of T

(Tanner, Robert)

occ: date

ampl

STC 23672-3